

Application No. 09/824,887  
Reply to Office Action of March 13, 2003  
Attorney Docket No. 4239010580

**Amendments to the Claims:**

Please cancel claims 1-18 and add claims 19-38 as follows.

**Listing of Claims:**

---

Claims 1-18 (canceled)

A1 19. (New) A method to balance workloads associated with a binner and renderer in a zone renderer configuration, comprising:

- configuring a size of a render cache viewed by the binner;
- monitoring the binner and renderer for a predefined time period;
- detecting whether there is an imbalance between the binner and renderer; and
- in response to detecting an imbalance between the binner and the renderer, adjusting the size of the render cache viewed by the binner.

20. (New) The method of claim 19, wherein in response to detecting an imbalance between the binner and the renderer, adjusting the size of the render cache viewed by the binner further comprises:

increasing the size of the render cache viewed by the binner in response to an imbalance substantially caused by the binner.

21. (New) The method of claim 19, wherein in response to detecting an imbalance between the binner and the renderer, adjusting the size of the render cache viewed by the binner further comprises:

decreasing the size of the render cache viewed by the binner in response to an imbalance substantially caused by the renderer.

Application No. 09/824,887  
Reply to Office Action of March 13, 2003  
Attorney Docket No. 4239010580

22. (New) The method of claim 20, wherein the maximum size of the render cache viewed by the binner is equal or approximately equal to an associated display size.

23. (New) The method of claim 21, wherein the minimum size of the render cache viewed by the binner is equal or approximately equal to the size of the render cache in the renderer.

A 24. (New) The method of claim 19, wherein monitoring the binner and renderer for a predefined period comprises:  
polling the renderer for a predefined number of cycles.

25. (New) The method of claim 19, wherein monitoring the binner and renderer for a predefined period comprises:  
determining an execution time for the binner associated with rendering at least one object in relation to total processing time.

26. (New) The method of claim 19, further comprising:  
maintaining graphics rendering state variables within each zone to minimize imbalances between the binner and renderer

27. (New) The method of claim 26, further comprising:  
storing fast state variables into selected buffers.

28. (New) The method of claim 27, wherein storing fast state variables into selected buffers further comprises:

Application No. 09/824,887  
Reply to Office Action of March 13, 2003  
Attorney Docket No. 4239010580

storing frequently changed attributes of geometry into selected fast state variable buffers.

29. (New) The method of claim 28, further comprising:  
storing slow state variables into selected buffers.

30. (New) The method of claim 29, wherein storing slow state variables into selected buffers further comprises:  
storing infrequently changed attributes of geometry into selected slow state variable buffers.

A1  
31. (New) A machine readable medium having stored therein a plurality of machine readable instructions executable by a processor to balance workloads associated with a binner and renderer in a zone renderer configuration, the machine readable instructions comprising:

instructions to configure a size of a render cache viewed by the binner;  
instructions to monitor the binner and renderer for a predefined time period;  
instructions to detect whether there is an imbalance between the binner and renderer; and  
in response to detecting an imbalance between the binner and the renderer, instructions to adjust the size of the render cache viewed by the binner.

32. (New) The machine readable medium of claim 31, wherein in response to detecting an imbalance between the binner and the renderer, instructions to adjust the size of the render cache viewed by the binner further comprises:

Application No. 09/824,887  
Reply to Office Action of March 13, 2003  
Attorney Docket No. 4239010580

instructions to increase the size of the render cache viewed by the binner in response to an imbalance substantially caused by the binner.

33. (New) The machine readable medium of claim 31, wherein in response to detecting an imbalance between the binner and the renderer, instructions to adjust the size of the render cache viewed by the binner further comprises:

instructions to decrease the size of the render cache viewed by the binner in response to an imbalance substantially caused by the renderer.

34. (New) An apparatus for rendering at least one graphics object into an image comprising:

A  
a memory region;

a rendering engine; and

a circuit to

configure a size of a memory region viewed by a binner;

monitor the binner and rendering engine for a predefined time period;

detect whether there is an imbalance between the binner and rendering engine; and

in response to detecting an imbalance between the binner and rendering engine, adjust the size of the memory region viewed by the binner.

35. (New) The method of claim 34, wherein the circuit stores frequently changed attributes of geometry into selected areas of memory.

36. (New) The method of claim 35, wherein the circuit stores infrequently changed attributes of geometry into selected slow state variable buffers.